

DATA VALIDATION REPORT

PROJECT: Stormwater, Sandblast AOPC, Bradford Island, Cascade Locks, OR

LABORATORY: Katahdin Analytical and Eurofins TestAmerica Seattle

MATRIX: Stormwater

SAMPLING DATE(S): November 15, 2019

SAMPLING EVENT(s): Stormwater Sampling #3

REPORT DATE: April 30, 2020

Validator: Jacob Williams

1. Introduction

The following is a data validation report for stormwater samples collected on November 15, 2019 from the storm drain system in the Sandblast Area of Potential Concern (AOPC) on Bradford Island, in Cascade Locks, OR. The sample data groups (SDG), analytes measured, methods used, and the laboratory information is provided below:

Sample Data Group (SDG)	No. of Samples	Matrix	Analyte(s)	Method	Validation Level
Katahdin TM2206	2	Stormwater	Metals	200.8	Stage 2b (S2BVM)
			Mercury	7470	
			SVOCs	8270D SIM	
			Pesticides	8081B	
			Dissolved Organic Carbon	EPA 415.1	
			Total Suspended Solids	SM 2540D	
			Total Hardness	200.8 (calculated)	
Eurofins TestAmerica ¹ 580-90861-1	2	Stormwater	PCB Congeners	1668A	Stage 2b (S2BVM)
			PAHs	8270D SIM	
			Total Organotins	PSEP/Krone Method	
			Gas Range Organics	NWTPH-Gx	
			Diesel Range Organics	NWTPH-Dx	

¹Eurofins TestAmerica Seattle is a subcontractor for Katahdin.

The field sample identification numbers, sampling dates, locations, and corresponding laboratory identification numbers are listed in Table 1 (end of report).

Sample analyses were evaluated to level Stage 2B data validation. Stage 2B validation of the laboratory analytical data package consists of verification and validation based on completeness and compliance checks of sample receipt conditions and both sample-related and instrument-related QC results.

Analytical results are qualified based on the definitions and use of qualifying flags in the following resources:

- Department of Defense (DoD) Quality Systems Manual for Environmental Laboratories, Version 5.3 (DoD, 2019)
- DoD General Data Validation Guidelines (DoD, 2018a, 2018b)
- United States Environmental Protection Agency (USEPA) Guidance for Labeling Externally Validated Data for Superfund Use (USEPA, 2009)
- USEPA National Functional Guidelines (NFGs) for Superfund Data Review (USEPA, 2016, 2017a, 2017b)

Definitions for limits and flags are given in Table 2. All detected concentrations less than the Limit of Quantitation (LOQ) are reported at their detected value but flagged J for estimated. Non-detects are reported at the Limit of Detection (LOD) and flagged U for undetected.

The validated data is presented in Table 3. Some data may be qualified using the reviewer's professional judgment. The conclusions presented herein are based on the information available for the review.

2. Metals Data Review, ICP-MS, Method 200.8

2.1 Stage 1 Review

Reviewed Item	Determination	Requirements/Comments
Sample Custody	SATISFACTORY	All samples received under proper chain of custody. <ul style="list-style-type: none"> Sampled: 15 November 2019 between 08:12 and 08:13 Relinquished at FedEx: 15 November 2019 at 12:00 Arrived at Katahdin: 16 November 2019 at 09:54
Temperature	SATISFACTORY	Temperature 4 ± 2 °C Temperature at arrival: 3.7 °C
Holding Time	SATISFACTORY	Holding time for aqueous samples is 6 months. Samples for dissolved metals were filtered at the laboratory. Per EPA, hold time for metals to be filtered, and then acid preserved, or analyzed without acid preservation is 14 days (EPA 2016). <ul style="list-style-type: none"> Sampled: 15 November 2019 Digested: 20 November 2019 (5 days) Analyzed: 22 November 2019 (2 days)
Dilution	INFORMATION ONLY	No samples were diluted.

2.2 Stage 2a Review

Reviewed Item	Determination	Requirements/Comments
Method Blank (MB)	SATISFACTORY	<ul style="list-style-type: none"> Perform one per preparatory batch. The absolute values of all analytes must be $< \frac{1}{2}$ LOQ or $< 1/10$th the amount measured in any sample or $1/10$th the regulatory limit, whichever is greater.
Laboratory Control Sample (LCS), LCS Duplicate (LCSD), and Relative Percent Difference (RPD)	SATISFACTORY	<ul style="list-style-type: none"> Perform one per preparatory batch. Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan. Specified: Lab in-house limits RPD of all analytes $\leq 20\%$ (between LCS and LCSD). LCSD/RPD not necessary by Table B-9.
Matrix Spike (MS), Matrix Spike Duplicate (MSD), and Relative Percent Difference (RPD)	See Qualification Summary Table	<ul style="list-style-type: none"> Perform one per preparatory batch. Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan. Specified: Lab in-house limits RPD of all analytes $\leq 20\%$ (between MS and MSD). Dilution test and post digestion spike are required if MS or MSD fails.

Reviewed Item	Determination	Requirements/Comments
Compound Identification and Quantitation	SATISFACTORY	<ul style="list-style-type: none"> Compounds are identified and quantified automatically by the instrument. Manual integration of one or more chromatographic peaks may be required to correct integration performed by the instrument. All cases where manual review and integration of the chromatograms was required were initialed and dated by the reviewer in the data package. Was manual integration performed? (Y/N): N
Field Duplicates (FD)	NA	<ul style="list-style-type: none"> RPD of all analytes $\leq 30\%$ (between sample and FD), or as specified by project limits. Were FDs collected? (Y/N): N
Filter Blank	SATISFACTORY	<ul style="list-style-type: none"> One filter blank is performed to perform quality control on the filtration that is performed for dissolved metals analysis. No requirements or guidelines per DoD/DOE QSM Professional judgment is used to qualify data based on detections in the filter blank.

2.3 Stage 2b Review

Reviewed Item	Determination	Requirements/Comments
Linear Dynamic Range (LDR) or High-Level Check Standard	See Qualification Summary Table	<ul style="list-style-type: none"> Perform at initial set-up and checked every 6 months with a high standard at the upper limit of the range. Within $\pm 10\%$ of true value.
Tuning	SATISFACTORY	<ul style="list-style-type: none"> Perform prior to ICAL. Mass calibration ≤ 0.1 amu from true value Resolution < 0.9 amu full width at 10% peak height.
Initial Calibration (ICAL) for All Analytes	SATISFACTORY	<ul style="list-style-type: none"> Daily ICAL prior to sample analysis. If more than one calibration standard is used, $r^2 \geq 0.99$.
Initial Calibration Verification (ICV)	SATISFACTORY	<ul style="list-style-type: none"> Perform once after each ICAL, analysis of a second source standard prior to sample analysis. All reported analytes within $\pm 10\%$ of true value.
Continuing Calibration Verification (CCV)	SATISFACTORY	<ul style="list-style-type: none"> Perform after every 10 field samples and at the end of the analysis sequence. All reported analytes within $\pm 10\%$ of the true value.
Low-Level Calibration Check Standard (LLCCV)	SATISFACTORY	<ul style="list-style-type: none"> Perform daily. All reported analytes within $\pm 20\%$ of the true value.
Internal Standards (IS)	SATISFACTORY	<ul style="list-style-type: none"> Perform every field sample, standard and QC sample. IS intensity in the samples within 30-120% of intensity of the IS in the ICAL blank.
Initial and Continuing Calibration Blank (ICB/CCB)	ICB: SATISFACTORY CCB: SATISFACTORY	<ul style="list-style-type: none"> Perform immediately after the ICV and immediately after every CCV. The absolute values of all analytes must be $< \frac{1}{2}$ LOQ or $< 1/10$th the amount measured in any sample.
Interference Check Solution (ICS)	SATISFACTORY	<ul style="list-style-type: none"> Perform after ICAL and prior to sample analysis. ICS-A: Absolute value of concentration for all non-spiked project analytes $< 1/2$ LOQ (unless they are a

		verified trace impurity from one of the spiked analytes); • ICS-AB: Within $\pm 20\%$ of true value.
--	--	---

2.4 Qualification Summary Table

SDG	Sample Affected	Analyte	Flag	Notes
TM2206	OF-2	cadmium, total	J+ (all detects)	MS & MSD %R out of control high.
TM2206	OF-1, OF-2	silver, total & dissolved	No flag (non-detects and detects \leq LDR); J (detects > LDR)	LDR %R out of control low.

3. Mercury Data Review, AA, Method 7470A

3.1 Stage 1 Review

Reviewed Item	Determination	Requirements/Comments
Sample Custody	SATISFACTORY	All samples received under proper chain of custody. • Sampled: 15 November 2019 between 08:12 and 08:13 • Relinquished at FedEx: 15 November 2019 at 12:00 • Arrived at Katahdin: 16 November 2019 at 09:54
Temperature	SATISFACTORY	Temperature 4 ± 2 °C Temperature at arrival: 3.7 °C
Holding Time	SATISFACTORY	Holding time for aqueous samples is 6 months. • Sampled: 15 November 2019 • Digested: 20 November 2019 (5 days) • Analyzed: 22 November 2019 (2 days)
Dilution	INFORMATION ONLY	No samples were diluted.

3.2 Stage 2a Review

Reviewed Item	Determination	Requirements/Comments
Method Blank (MB)	SATISFACTORY	• Perform one per preparatory batch. • The absolute values of all analytes must be $< \frac{1}{2}$ LOQ or $< 1/10$ th the amount measured in any sample or $1/10$ th the regulatory limit, whichever is greater.
Laboratory Control Sample (LCS), LCS Duplicate (LCSD), and Relative Percent Difference (RPD)	SATISFACTORY	• Perform one per preparatory batch. • Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan. • Specified: Lab in-house limits • RPD of all analytes $\leq 20\%$ (between LCS and LCSD). • LCSD/RPD not necessary by Table B-7.

Reviewed Item	Determination	Requirements/Comments
Matrix Spike (MS), Matrix Spike Duplicate (MSD), and Relative Percent Difference (RPD)	SATISFACTORY	<ul style="list-style-type: none"> Perform one per preparatory batch. Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan. Specified: Lab in-house limits RPD of all analytes $\leq 20\%$ (between MS and MSD). Dilution test and post digestion spike are required if MS or MSD fails.
Compound Identification and Quantitation	SATISFACTORY	<ul style="list-style-type: none"> Compounds are identified and quantified automatically by the instrument. Manual integration of one or more chromatographic peaks may be required to correct integration performed by the instrument. All cases where manual review and integration of the chromatograms was required were initialed and dated by the reviewer in the data package. Was manual integration performed? (Y/N): N
Field Duplicates (FD)	NA	<ul style="list-style-type: none"> RPD of all analytes $\leq 30\%$ (between sample and FD), or as specified by project limits. Were FDs collected? (Y/N): N
Filter Blank	SATISFACTORY	<ul style="list-style-type: none"> One filter blank is performed to perform quality control on the filtration that is performed for dissolved metals analysis. No requirements or guidelines per DoD/DOE QSM Professional judgment is used to qualify data based on detections in the filter blank.

3.3 Stage 2b Review

Reviewed Item	Determination	Requirements/Comments
Initial Calibration (ICAL) for All Analytes	SATISFACTORY	<ul style="list-style-type: none"> Daily ICAL prior to sample analysis. If more than one calibration standard is used, $r^2 \geq 0.99$.
Initial Calibration Verification (ICV)	SATISFACTORY	<ul style="list-style-type: none"> Perform once after each ICAL, analysis of a second source standard prior to sample analysis. All reported analytes within $\pm 10\%$ of true value.
Continuing Calibration Verification (CCV)	SATISFACTORY	<ul style="list-style-type: none"> Perform after every 10 field samples and at the end of the analysis sequence. All reported analytes within $\pm 10\%$ of the true value.
Low-Level Calibration Check Standard (LLCCV)	SATISFACTORY	<ul style="list-style-type: none"> Perform daily. All reported analytes within $\pm 20\%$ of the true value.
Initial and Continuing Calibration Blank (ICB/CCB)	ICB: SATISFACTORY CCB: SATISFACTORY	<ul style="list-style-type: none"> Perform immediately after the ICV and immediately after every CCV. The absolute values of all analytes must be $< \frac{1}{2}$ LOQ or $< 1/10$th the amount measured in any sample.

3.4 Qualification Summary Table

No data was qualified based on validation.

4. SVOCs Data Review, GC/MS, Method 8270D Selected Ion Mode (SIM)

4.1 Stage 1 Review

Reviewed Item	Determination	Requirements/Comments
Sample Custody	SATISFACTORY	All samples received under proper chain of custody. <ul style="list-style-type: none"> Sampled: 15 November 2019 between 08:12 and 08:13 Relinquished at FedEx: 15 November 2019 at 12:00 Arrived at Katahdin: 16 November 2019 at 09:54
Temperature	SATISFACTORY	Temperature 4 ± 2 °C Temperature at arrival: 3.7 °C
Holding Time	SATISFACTORY	Holding time for aqueous samples is 14 days. <ul style="list-style-type: none"> Sampled: 15 November 2019 Extracted: 20 November 2019 (5 days) Analyzed: 10 December 2019 (20 days)
Dilution	INFORMATION ONLY	No samples were diluted.

4.2 Stage 2a Review

Reviewed Item	Determination	Requirements/Comments
Method Blank (MB)	SATISFACTORY	<ul style="list-style-type: none"> Perform one per preparatory batch. No analytes detected $> \frac{1}{2}$ LOQ or $> 1/10$th the amount measured in any sample or $1/10$th the regulatory limit, whichever is greater. Common contaminants must not be detected $> \text{LOQ}$.
Laboratory Control Sample (LCS)	See Qualification Summary Table	<ul style="list-style-type: none"> Perform one per preparatory batch. Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan. Specified: Lab in-house limits LCSD/RPD not necessary by Table B-22.
Matrix Spike (MS), Matrix Spike Duplicate (MSD), and Relative Percent Difference (RPD)	See Qualification Summary Table	<ul style="list-style-type: none"> Perform one per preparatory batch. Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan. Specified: Lab in-house limits RPD of all analytes $\leq 20\%$ (between MS and MSD).
Surrogate Spike	SATISFACTORY	<ul style="list-style-type: none"> Perform for all field and QC samples. Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan.
Compound Identification and Quantitation	SATISFACTORY	<ul style="list-style-type: none"> Compounds are identified and quantified automatically by the instrument. Manual integration of one or more chromatographic peaks may be required to correct integration performed by the instrument. All cases where manual review and integration of the chromatograms was required were initialed and dated by the reviewer in the data package. Was manual integration performed? (Y/N): Y

Reviewed Item	Determination	Requirements/Comments
Field Duplicates (FD)	NA	<ul style="list-style-type: none"> RPD of all analytes $\leq 30\%$ (between sample and FD), or as specified by project limits. Were FDs collected? (Y/N): N

4.3 Stage 2b Review

Reviewed Item	Determination	Requirements/Comments
Tune Check	SATISFACTORY	<ul style="list-style-type: none"> Perform prior to ICAL and prior to each 12-hour period of sample analysis. Mass Specific ion abundance criteria of BFB or DFTPP from method.
Performance Check (Method 8270 only)	SATISFACTORY	<ul style="list-style-type: none"> Perform at the beginning of each 12-hour period, prior to analysis of samples. Degradation $\leq 20\%$ for DDT. Benzidine and pentachlorophenol shall be present at their normal responses and shall not exceed a tailing factor of 2.
Initial Calibration (ICAL) for All Analytes Including Surrogates	See Qualification Summary Table	<ul style="list-style-type: none"> Perform at instrument set-up and after ICV or CCV failure, prior to sample analysis. Each analyte must meet one of the three options below: <ul style="list-style-type: none"> Option 1: RSD for each analyte $\leq 15\%$; Option 2: linear least squares regression for each analyte: $r^2 \geq 0.99$; Option 3: non-linear least squares regression (quadratic) for each analyte: $r^2 \geq 0.99$.
Retention Time window position establishment	SATISFACTORY	<ul style="list-style-type: none"> Perform once per ICAL and at the beginning of the analytical sequence. Position shall be set using the midpoint standard of the ICAL curve when ICAL is performed. On days when ICAL is not performed, the initial CCV is used.
Evaluation of Relative Retention Times (RRT)	SATISFACTORY	<ul style="list-style-type: none"> Perform with each sample. RRT of each reported analyte within ± 0.06 RRT units.
Initial Calibration Verification (ICV)	SATISFACTORY	<ul style="list-style-type: none"> Perform once after each ICAL, analysis of a second source standard prior to sample analysis. All reported analytes within $\pm 20\%$ of true value.
Continuing Calibration Verification (CCV)	See Qualification Summary Table	<ul style="list-style-type: none"> Perform daily before sample analysis; after every 12 hours of analysis time; and at the end of the analytical batch run. All reported analytes and surrogates within $\pm 20\%$ of the true value. All reported analytes and surrogates within $\pm 50\%$ for end of analytical batch CCV.
Internal Standards (IS)	SATISFACTORY	<ul style="list-style-type: none"> Perform every field sample, standard and QC sample. Retention time within ± 10 seconds from retention time of the midpoint standard in the ICAL; EICP area within -50% to $+100\%$ of ICAL midpoint standard. On days when ICAL is not performed, the daily initial CCV can be used.

4.4 Qualification Summary Table

SDG	Sample Affected	Analyte	Flag	Notes
TM2206	OF-1, OF-2	carbazole	J+ (all detects); no flag (all non-detects)	LCS %R is out of control high.
TM2206	OF-2	bis(2-ethylhexyl)phthalate	J- (all detects); UJ (all non-detects)	MS & MSD %R is out of control low.
TM2206	OF-2	carbazole	J+ (all detects); no flag (all non-detects)	MS & MSD %R is out of control high.
TM2206	OF-2	phenol	J (all detects); UJ (all non-detects)	MS/MSD RPD is out of control high.
TM2206	OF-1, OF-2	carbazole	J (all detects); UJ (all non-detects)	ICAL %RSD out of control high.
TM2206	OF-1, OF-2	carbazole	J (all detects); UJ (all non-detects)	CCV %drift out of control high.

5. PAHs Data Review, GC/MS, Method 8270D Selected Ion Mode (SIM)

5.1 Stage 1 Review

Reviewed Item	Determination	Requirements/Comments
Sample Custody	SATISFACTORY	All samples received under proper chain of custody. <ul style="list-style-type: none"> Sampled: 15 November 2019 between 08:12 and 08:13 Relinquished at FedEx: 15 November 2019 at 12:00 Arrived at Eurofins Test America: 16 November 2019 at 11:50
Temperature	See Qualification Summary Table	Temperature 4 ± 2 °C Temperature at arrival: 2 coolers @ 6.5, 7.8 °C
Holding Time	SATISFACTORY	Extraction holding time for aqueous samples is 14 days, and analysis holding time for extracts is 40 days. <ul style="list-style-type: none"> Sampled: 15 November 2019 Extracted: 19 November 2019 (4 days) Analyzed: 21 November 2019 (2 days)
Dilution	INFORMATION ONLY	No samples were diluted.

5.2 Stage 2a Review

Reviewed Item	Determination	Requirements/Comments
Method Blank (MB)	SATISFACTORY	<ul style="list-style-type: none"> Perform one per preparatory batch. No analytes detected > ½ LOQ or > 1/10th the amount measured in any sample or 1/10th the regulatory limit, whichever is greater. Common contaminants must not be detected > LOQ.

Reviewed Item	Determination	Requirements/Comments
Laboratory Control Sample (LCS)	SATISFACTORY	<ul style="list-style-type: none"> Perform one per preparatory batch. Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan. Specified: Lab in-house limits LCSD/RPD not necessary by Table B-22.
Matrix Spike (MS), Matrix Spike Duplicate (MSD), and Relative Percent Difference (RPD)	See Qualification Summary Table	<ul style="list-style-type: none"> Perform one per preparatory batch. Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan. Specified: Lab in-house limits RPD of all analytes $\leq 20\%$ (between MS and MSD).
Surrogate Spike	SATISFACTORY	<ul style="list-style-type: none"> Perform for all field and QC samples. Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan.
Compound Identification and Quantitation	SATISFACTORY	<ul style="list-style-type: none"> Compounds are identified and quantified automatically by the instrument. Manual integration of one or more chromatographic peaks may be required to correct integration performed by the instrument. All cases where manual review and integration of the chromatograms was required were initialed and dated by the reviewer in the data package. Was manual integration performed? (Y/N): Y
Field Duplicates (FD)	NA	<ul style="list-style-type: none"> RPD of all analytes $\leq 30\%$ (between sample and FD), or as specified by project limits. Were FDs collected? (Y/N): N

5.3 Stage 2b Review

Reviewed Item	Determination	Requirements/Comments
Tune Check	SATISFACTORY	<ul style="list-style-type: none"> Perform prior to ICAL and prior to each 12-hour period of sample analysis. Mass Specific ion abundance criteria of BFB or DFTPP from method.
Performance Check (Method 8270 only)	SATISFACTORY	<ul style="list-style-type: none"> Perform at the beginning of each 12-hour period, prior to analysis of samples. Degradation $\leq 20\%$ for DDT. Benzidine and pentachlorophenol shall be present at their normal responses and shall not exceed a tailing factor of 2.
Initial Calibration (ICAL) for All Analytes Including Surrogates	SATISFACTORY	<ul style="list-style-type: none"> Perform at instrument set-up and after ICV or CCV failure, prior to sample analysis. Each analyte must meet one of the three options below: <ul style="list-style-type: none"> Option 1: RSD for each analyte $\leq 15\%$; Option 2: linear least squares regression for each analyte: $r^2 \geq 0.99$; Option 3: non-linear least squares regression (quadratic) for each analyte: $r^2 \geq 0.99$.

Reviewed Item	Determination	Requirements/Comments
Retention Time window position establishment	SATISFACTORY	<ul style="list-style-type: none"> Perform once per ICAL and at the beginning of the analytical sequence. Position shall be set using the midpoint standard of the ICAL curve when ICAL is performed. On days when ICAL is not performed, the initial CCV is used.
Evaluation of Relative Retention Times (RRT)	SATISFACTORY	<ul style="list-style-type: none"> Perform with each sample. RRT of each reported analyte within ± 0.06 RRT units.
Initial Calibration Verification (ICV)	SATISFACTORY	<ul style="list-style-type: none"> Perform once after each ICAL, analysis of a second source standard prior to sample analysis. All reported analytes within $\pm 20\%$ of true value.
Continuing Calibration Verification (CCV)	SATISFACTORY	<ul style="list-style-type: none"> Perform daily before sample analysis; after every 12 hours of analysis time; and at the end of the analytical batch run. All reported analytes and surrogates within $\pm 20\%$ of the true value. All reported analytes and surrogates within $\pm 50\%$ for end of analytical batch CCV.
Internal Standards (IS)	SATISFACTORY	<ul style="list-style-type: none"> Perform every field sample, standard and QC sample. Retention time within ± 10 seconds from retention time of the midpoint standard in the ICAL; EICP area within -50% to $+100\%$ of ICAL midpoint standard. On days when ICAL is not performed, the daily initial CCV can be used.

5.4 Qualification Summary Table

SDG	Sample Affected	Analyte	Flag	Notes
580-90861-1	OF-1, OF-2	All analytes	No flags	Cooler temperature arrived to the laboratory out of control high, but ≤ 10 °C
580-90861-1	OF-2	naphthalene, 2-methylnaphthalene	J (all detects), UJ (all non-detects)	MS/MSD RPD out of control high.

6. Organochlorine Pesticides Data Review, GC/MS, Method 8081B

6.1 Stage 1 Review

Reviewed Item	Determination	Requirements/Comments
Sample Custody	SATISFACTORY	<p>All samples received under proper chain of custody.</p> <ul style="list-style-type: none"> Sampled: 15 November 2019 between 08:12 and 08:13 Relinquished at FedEx: 15 November 2019 at 12:00 Arrived at Katahdin: 16 November 2019 at 09:54
Temperature	SATISFACTORY	<p>Temperature 4 ± 2 °C</p> <p>Temperature at arrival: 3.7 °C</p>
Holding Time	SATISFACTORY	<p>Extraction holding time for aqueous samples is 14 days, and analysis holding time for extracts is 40 days.</p> <ul style="list-style-type: none"> Sampled: 15 November 2019 Extracted: 21 November 2019 (5 days) Analyzed: 22 November 2019 (20 days)
Dilution	INFORMATION ONLY	No samples were diluted.

6.2 Stage 2a Review

Reviewed Item	Determination	Requirements/Comments
Method Blank (MB)	SATISFACTORY	<ul style="list-style-type: none"> Perform one per preparatory batch. No analytes detected > ½ LOQ or > 1/10th the amount measured in any sample or 1/10th the regulatory limit, whichever is greater. Common contaminants must not be detected > LOQ.
Laboratory Control Sample (LCS)	SATISFACTORY	<ul style="list-style-type: none"> Perform one per preparatory batch. Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan. Specified: Lab in-house limits LCSD/RPD not necessary by Table B-1.
Matrix Spike (MS), Matrix Spike Duplicate (MSD), and Relative Percent Difference (RPD)	SATISFACTORY	<ul style="list-style-type: none"> Perform one per preparatory batch. Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan. Specified: Lab in-house limits RPD of all analytes ≤ 20% (between MS and MSD).
Surrogate Spike	See Qualification Summary Table	<ul style="list-style-type: none"> Perform for all field and QC samples. Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan.
Compound Identification and Quantitation	SATISFACTORY	<ul style="list-style-type: none"> Compounds are identified and quantified automatically by the instrument. Manual integration of one or more chromatographic peaks may be required to correct integration performed by the instrument. All cases where manual review and integration of the chromatograms was required were initialed and dated by the reviewer in the data package. Was manual integration performed? (Y/N): Y
Field Duplicates (FD)	NA	<ul style="list-style-type: none"> RPD of all analytes ≤ 30% (between sample and FD), or as specified by project limits. Were FDs collected? (Y/N): N
Confirmation by Dual Column Analysis	See Qualification Summary Table	<ul style="list-style-type: none"> RPD is within method acceptance limits (40%)

6.3 Stage 2b Review

Reviewed Item	Determination	Requirements/Comments
Tune Check	SATISFACTORY	<ul style="list-style-type: none"> Perform prior to ICAL and prior to each 12-hour period of sample analysis. Mass Specific ion abundance criteria of BFB or DFTPP from method.

Reviewed Item	Determination	Requirements/Comments
Initial Calibration (ICAL) for All Analytes Including Surrogates	SATISFACTORY	<ul style="list-style-type: none"> Perform at instrument set-up and after ICV or CCV failure, prior to sample analysis. Each analyte must meet one of the three options below: <ul style="list-style-type: none"> Option 1: RSD for each analyte $\leq 15\%$; Option 2: linear least squares regression for each analyte: $r^2 \geq 0.99$; Option 3: non-linear least squares regression (quadratic) for each analyte: $r^2 \geq 0.99$.
Retention Time window position establishment	SATISFACTORY	<ul style="list-style-type: none"> Perform once per ICAL and at the beginning of the analytical sequence. Position shall be set using the midpoint standard of the ICAL curve when ICAL is performed. On days when ICAL is not performed, the initial CCV is used.
Evaluation of Relative Retention Times (RRT)	SATISFACTORY	<ul style="list-style-type: none"> Perform with each sample. RRT of each reported analyte within ± 0.06 RRT units.
Initial Calibration Verification (ICV)	See Qualification Summary Table	<ul style="list-style-type: none"> Perform once after each ICAL, analysis of a second source standard prior to sample analysis. All reported analytes within $\pm 20\%$ of true value.
Continuing Calibration Verification (CCV)	SATISFACTORY	<ul style="list-style-type: none"> Perform daily before sample analysis; after every 12 hours of analysis time; and at the end of the analytical batch run. All reported analytes and surrogates within $\pm 20\%$ of the true value. All reported analytes and surrogates within $\pm 50\%$ for end of analytical batch CCV.
Internal Standards (IS)	SATISFACTORY	<ul style="list-style-type: none"> Perform every field sample, standard and QC sample. Retention time within ± 10 seconds from retention time of the midpoint standard in the ICAL; EICP area within -50% to $+100\%$ of ICAL midpoint standard. On days when ICAL is not performed, the daily initial CCV can be used.

6.4 Qualification Summary Table

SDG	Sample Affected	Analyte	Flag	Notes
TM2206	OF-1	All target analytes	J- (all detects), UJ (all non-detects)	surrogate %R out of control low
TM2206	OF-1	dieldrin, endosulfan sulfate, endrin ketone	no flag	confirmation column RPD out of control high, however detected analytes are < LOQ, so no flag applied.

7. Polychlorinated Biphenyl (PCB) Congeners Data Review, GC/MS, Method 1668C

7.1 Stage 1 Review

Reviewed Item	Determination	Requirements/Comments
Sample Custody	SATISFACTORY	All samples received under proper chain of custody. <ul style="list-style-type: none"> Sampled: 15 November 2019 between 08:12 and 08:13 Relinquished at FedEx: 15 November 2019 at 12:00 Arrived at Eurofins Test America: 16 November 2019 at 11:50
Temperature	See Qualification Summary Table	Temperature 4 ± 2 °C Temperature at arrival: 2 coolers @ 6.5, 7.8 °C
Holding Time	SATISFACTORY	Extraction holding time for aqueous samples is 14 days, and analysis holding time for extracts is 40 days. <ul style="list-style-type: none"> Sampled: 15 November 2019 Extracted: 25 November 2019 (10 days) Analyzed: 03 December 2019 (2 days)
Dilution	INFORMATION ONLY	No samples were diluted.

7.2 Stage 2a Review

Reviewed Item	Determination	Requirements/Comments
Method Blank (MB)	See Qualification Summary Table	<ul style="list-style-type: none"> Perform one per preparatory batch. No analytes detected $> \frac{1}{2}$ LOQ or $> 1/10$th the amount measured in any sample or $1/10$th the regulatory limit, whichever is greater. Common contaminants must not be detected $> \text{LOQ}$.
Laboratory Control Sample (LCS)	SATISFACTORY	<ul style="list-style-type: none"> Perform one per preparatory batch. Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan. Specified: Lab in-house limits
Matrix Spike (MS), Matrix Spike Duplicate (MSD), and Relative Percent Difference (RPD)	SATISFACTORY	<ul style="list-style-type: none"> Perform one per preparatory batch. Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan. Specified: Lab in-house limits RPD of all analytes $\leq 50\%$ (between MS and MSD).
Surrogate Spike	SATISFACTORY	<ul style="list-style-type: none"> Perform for all field and QC samples. Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan.
Compound Identification and Quantitation	SATISFACTORY	<ul style="list-style-type: none"> Compounds are identified and quantified automatically by the instrument. Manual integration of one or more chromatographic peaks may be required to correct integration performed by the instrument. All cases where manual review and integration of the chromatograms was required were initialed and dated by the reviewer in the data package. Was manual integration performed? (Y/N): Y

Reviewed Item	Determination	Requirements/Comments
Field Duplicates (FD)	NA	<ul style="list-style-type: none"> RPD of all analytes $\leq 30\%$ (between sample and FD), or as specified by project limits. Were FDs collected? (Y/N): N

7.3 Stage 2b Review

Reviewed Item	Determination	Requirements/Comments
Tune Check	SATISFACTORY	<ul style="list-style-type: none"> Perform prior to ICAL and prior to each 12-hour period of sample analysis. Mass Specific ion abundance criteria of BFB or DFTPP from method.
Initial Calibration (ICAL) for All Analytes Including Surrogates	SATISFACTORY	<ul style="list-style-type: none"> Perform at instrument set-up and after ICV or CCV failure, prior to sample analysis. Each analyte must meet one of the three options below: <ul style="list-style-type: none"> Option 1: RSD for each analyte $\leq 15\%$; Option 2: linear least squares regression for each analyte: $r^2 \geq 0.99$; Option 3: non-linear least squares regression (quadratic) for each analyte: $r^2 \geq 0.99$.
Retention Time window position establishment	SATISFACTORY	<ul style="list-style-type: none"> Perform once per ICAL and at the beginning of the analytical sequence. Position shall be set using the midpoint standard of the ICAL curve when ICAL is performed. On days when ICAL is not performed, the initial CCV is used.
Evaluation of Relative Retention Times (RRT)	SATISFACTORY	<ul style="list-style-type: none"> Perform with each sample. RRT of each reported analyte within ± 0.06 RRT units.
Initial Calibration Verification (ICV)	SATISFACTORY	<ul style="list-style-type: none"> Perform once after each ICAL, analysis of a second source standard prior to sample analysis. All reported analytes within $\pm 20\%$ of true value.
Continuing Calibration Verification (CCV)	SATISFACTORY	<ul style="list-style-type: none"> Perform daily before sample analysis; after every 12 hours of analysis time; and at the end of the analytical batch run. All reported analytes and surrogates within $\pm 20\%$ of the true value. All reported analytes and surrogates within $\pm 50\%$ for end of analytical batch CCV.
Internal Standards (IS)	SATISFACTORY	<ul style="list-style-type: none"> Perform every field sample, standard and QC sample. Retention time within ± 10 seconds from retention time of the midpoint standard in the ICAL; EICP area within -50% to $+100\%$ of ICAL midpoint standard. On days when ICAL is not performed, the daily initial CCV can be used.

7.4 Qualification Summary Table

SDG	Sample Affected	Analyte	Flag	Notes
-----	-----------------	---------	------	-------

580-90861-1	OF-1, OF-2	All analytes	No flags	Cooler temperature arrived to the laboratory out of control high, but ≤ 10 °C
580-90861-1	OF-1	PCB-1 PCB-3 PCB-18 PCB-20 PCB-28 PCB-30 PCB-31 PCB-40 PCB-71 PCB-209	UJ (all detects)	Concentrations detected in the method blank are $> 1/10$ the concentration detected in the parent sample. Concentrations were flagged as non-detect at their detected concentration.
580-90861-1	OF-1	PCB-44 PCB-47 PCB-49 PCB-52 PCB-61 PCB-65 PCB-69 PCB-70 PCB-74 PCB-76 PCB-90 PCB-95 PCB-101 PCB-105 PCB-110 PCB-113 PCB-115 PCB-118 PCB-128 PCB-129 PCB-138 PCB-156 PCB-157 PCB-159 PCB-163 PCB-166 PCB-167 PCB-169 PCB-189 PCB-194 PCB-195 PCB-198 PCB-199	no flag	Concentrations detected in the method blank are $< 1/10$ the concentration detected in the parent sample.

580-90861-1	OF-2	PCB-1 PCB-3 PCB-18 PCB-20 PCB-28 PCB-30 PCB-31 PCB-40 PCB-44 PCB-47 PCB-49 PCB-52 PCB-61 PCB-65 PCB-69 PCB-70 PCB-74 PCB-76 PCB-90 PCB-95 PCB-101 PCB-105 PCB-110 PCB-113 PCB-115 PCB-118 PCB-128 PCB-156 PCB-157 PCB-159 PCB-166 PCB-167 PCB-169 PCB-189	UJ (all detects)	Concentrations detected in the method blank are > 1/10 the concentration detected in the parent sample. Concentrations were flagged as non-detect at their detected concentration.
580-90861-1	OF-2	PCB-129 PCB-138 PCB-163 PCB-194 PCB-195 PCB-198 PCB-199	no flag	Concentrations detected in the method blank are < 1/10 the concentration detected in the parent sample.

8. Organotins Data Review, GC/MS, PSEP/Krone Method

8.1 Stage 1 Review

Reviewed Item	Determination	Requirements/Comments
Sample Custody	SATISFACTORY	All samples received under proper chain of custody. <ul style="list-style-type: none"> Sampled: 15 November 2019 between 08:12 and 08:13 Relinquished at FedEx: 15 November 2019 at 12:00 Arrived at Eurofins Test America: 16 November 2019 at 11:50
Temperature	See Qualification Summary Table	Temperature 4 ± 2 °C Temperature at arrival: 2 coolers @ 6.5, 7.8 °C

Reviewed Item	Determination	Requirements/Comments
Holding Time	SATISFACTORY	Extraction holding time for aqueous samples is 14 days, and analysis holding time for extracts is 40 days. <ul style="list-style-type: none"> • Sampled: 15 November 2019 • Extracted: 21 November 2019 (6 days) • Analyzed: 02 December 2019 (11 days)
Dilution	INFORMATION ONLY	No samples were diluted.

8.2 Stage 2a Review

Reviewed Item	Determination	Requirements/Comments
Method Blank (MB)	SATISFACTORY	<ul style="list-style-type: none"> • Perform one per preparatory batch. • No analytes detected > ½ LOQ or > 1/10th the amount measured in any sample or 1/10th the regulatory limit, whichever is greater. • Common contaminants must not be detected > LOQ.
Laboratory Control Sample (LCS), Laboratory Control Sample Duplicate (LCSD) and Relative Percent Difference (RPD)	See Qualification Summary Table	<ul style="list-style-type: none"> • Perform one per preparatory batch. • Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan. • Specified: Lab in-house limits for recovery and RPD.
Matrix Spike (MS), Matrix Spike Duplicate (MSD), and Relative Percent Difference (RPD)	See Qualification Summary Table	<ul style="list-style-type: none"> • Perform one per preparatory batch. • Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan. • Specified: Lab in-house limits for recovery and RPD.
Surrogate Spike	SATISFACTORY	<ul style="list-style-type: none"> • Perform for all field and QC samples. • Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan.
Compound Identification and Quantitation	SATISFACTORY	<ul style="list-style-type: none"> • Compounds are identified and quantified automatically by the instrument. • Manual integration of one or more chromatographic peaks may be required to correct integration performed by the instrument. • All cases where manual review and integration of the chromatograms was required were initialed and dated by the reviewer in the data package. • Was manual integration performed? (Y/N): Y
Field Duplicates (FD)	NA	<ul style="list-style-type: none"> • RPD of all analytes ≤ 30% (between sample and FD), or as specified by project limits. • Were FDs collected? (Y/N): N

8.3 Stage 2b Review

Reviewed Item	Determination	Requirements/Comments
Tune Check	SATISFACTORY	<ul style="list-style-type: none"> • Perform prior to ICAL and prior to each 12-hour period of sample analysis. • Mass Specific ion abundance criteria of BFB or DFTPP from method.

Reviewed Item	Determination	Requirements/Comments
Initial Calibration (ICAL) for All Analytes Including Surrogates	SATISFACTORY	<ul style="list-style-type: none"> Perform at instrument set-up and after ICV or CCV failure, prior to sample analysis. Each analyte must meet one of the three options below: Option 1: RSD for each analyte $\leq 15\%$; Option 2: linear least squares regression for each analyte: $r^2 \geq 0.99$; Option 3: non-linear least squares regression (quadratic) for each analyte: $r^2 \geq 0.99$.
Retention Time window position establishment	SATISFACTORY	<ul style="list-style-type: none"> Perform once per ICAL and at the beginning of the analytical sequence. Position shall be set using the midpoint standard of the ICAL curve when ICAL is performed. On days when ICAL is not performed, the initial CCV is used.
Evaluation of Relative Retention Times (RRT)	SATISFACTORY	<ul style="list-style-type: none"> Perform with each sample. RRT of each reported analyte within ± 0.06 RRT units.
Initial Calibration Verification (ICV)	SATISFACTORY	<ul style="list-style-type: none"> Perform once after each ICAL, analysis of a second source standard prior to sample analysis. All reported analytes within $\pm 20\%$ of true value. In-house laboratory limit of $\pm 25\%$ of true value was used.
Continuing Calibration Verification (CCV)	SATISFACTORY	<ul style="list-style-type: none"> Perform daily before sample analysis; after every 12 hours of analysis time; and at the end of the analytical batch run. All reported analytes and surrogates within $\pm 20\%$ of the true value. All reported analytes and surrogates within $\pm 50\%$ for end of analytical batch CCV.
Internal Standards (IS)	SATISFACTORY	<ul style="list-style-type: none"> Perform every field sample, standard and QC sample. Retention time within ± 10 seconds from retention time of the midpoint standard in the ICAL; EICP area within -50% to $+100\%$ of ICAL midpoint standard. On days when ICAL is not performed, the daily initial CCV can be used.

8.4 Qualification Summary Table

SDG	Sample Affected	Analyte	Flag	Notes
580-90861-1	OF-1, OF-2	all dissolved analytes	No flags	Cooler temperature arrived to the laboratory out of control high, but $\leq 10^\circ\text{C}$
580-90861-1	OF-1, OF-2	monobutyltin (total & dissolved)	J (all detects), UJ (all non-detects)	LCS/LCSD RPD out of control high
580-90861-1	OF-2	monobutyltin, tributyltin (total)	J (all detects), UJ (all non-detects)	MS/MSD RPD out of control high

9. Gas-Range Petroleum Products Data Review, GC, Method NWTPH-Gx

9.1 Stage 1 Review

Reviewed Item	Determination	Requirements/Comments
---------------	---------------	-----------------------

Sample Custody	SATISFACTORY	All samples received under proper chain of custody. <ul style="list-style-type: none"> • Sampled: 15 November 2019 between 08:12 and 08:13 • Relinquished at FedEx: 15 November 2019 at 12:00 • Arrived at Eurofins Test America: 16 November 2019 at 11:50
Temperature	See Qualification Summary Table	Temperature 4 ± 2 °C Temperature at arrival: 2 coolers @ 6.5, 7.8 °C
Holding Time	SATISFACTORY	Holding time for aqueous samples is 14 days. <ul style="list-style-type: none"> • Sampled: 15 November 2019 • Analyzed: 20 November 2019 (5 days)
Dilution	INFORMATION ONLY	No samples were diluted.

9.2 Stage 2a Review

Reviewed Item	Determination	Requirements/Comments
Method Blank (MB)	SATISFACTORY	<ul style="list-style-type: none"> • Perform one per preparatory batch. • No analytes detected $> \frac{1}{2}$ LOQ or $> 1/10$th the amount measured in any sample or $1/10$th the regulatory limit, whichever is greater. • Common contaminants must not be detected $> \text{LOQ}$.
Laboratory Control Sample (LCS)	SATISFACTORY	<ul style="list-style-type: none"> • Perform one per preparatory batch. • Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan. • Specified: Lab in-house limits
Matrix Spike (MS), Matrix Spike Duplicate (MSD), and Relative Percent Difference (RPD)	SATISFACTORY	<ul style="list-style-type: none"> • Perform one per preparatory batch. • Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan. • Specified: Lab in-house limits • RPD of all analytes $\leq 30\%$ (between MS and MSD).
Surrogate Spike	SATISFACTORY	<ul style="list-style-type: none"> • Perform for all field and QC samples. • Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan.
Compound Identification and Quantitation	SATISFACTORY	<ul style="list-style-type: none"> • Compounds are identified and quantified automatically by the instrument. • Manual integration of one or more chromatographic peaks may be required to correct integration performed by the instrument. • All cases where manual review and integration of the chromatograms was required were initialed and dated by the reviewer in the data package. • Was manual integration performed? (Y/N): N
Field Duplicates (FD)	NA	<ul style="list-style-type: none"> • RPD of all analytes $\leq 30\%$ (between sample and FD), or as specified by project limits. • Were FDs collected? (Y/N): N

9.3 Stage 2b Review

Reviewed Item	Determination	Requirements/Comments
Initial Calibration (ICAL) for All Analytes Including Surrogates	SATISFACTORY	<ul style="list-style-type: none"> Perform at instrument set-up and after ICV or CCV failure, prior to sample analysis. Each analyte must meet one of the three options below: <ul style="list-style-type: none"> Option 1: RSD for each analyte $\leq 20\%$; Option 2: linear least squares regression for each analyte: $r^2 \geq 0.99$; Option 3: non-linear least squares regression (quadratic) for each analyte: $r^2 \geq 0.99$.
Retention Time window position establishment	SATISFACTORY	<ul style="list-style-type: none"> Perform once per ICAL and at the beginning of the analytical sequence. Position shall be set using the midpoint standard of the ICAL curve when ICAL is performed. On days when ICAL is not performed, the initial CCV is used.
Retention Time (RT) Window Width	SATISFACTORY	<ul style="list-style-type: none"> Perform at method set-up and after major maintenance (e.g., column change). RT width is ± 3 times standard deviation for each analyte RT from the 72-hour study or 0.03 minutes, whichever is greater.
Initial Calibration Verification (ICV)	SATISFACTORY	<ul style="list-style-type: none"> Perform once after each ICAL, analysis of a second source standard prior to sample analysis. All reported analytes within established RT windows. All reported analytes within $\pm 20\%$ of true value.
Continuing Calibration Verification (CCV)	SATISFACTORY	<ul style="list-style-type: none"> Perform daily before sample analysis, after every 10 field samples, and at the end of the analysis sequence with the exception of CCVs for Pesticide multi-component analytes (i.e., Toxaphene, Chlordane and Aroclors other than 1016 and 1260), which are only required before sample analysis. All reported analytes and surrogates within established RT windows. All reported analytes and surrogates within $\pm 20\%$ of true value.

9.4 Qualification Summary Table

SDG	Sample Affected	Analyte	Flag	Notes
580-90861-1	OF-1, OF-2	all dissolved analytes	No flags	Cooler temperature arrived to the laboratory out of control high, but $\leq 10^\circ\text{C}$

10. Diesel-Range Petroleum Products Data Review, GC, Method NWTPH-Gx

10.1 Stage 1 Review

Reviewed Item	Determination	Requirements/Comments
Sample Custody	SATISFACTORY	<p>All samples received under proper chain of custody.</p> <ul style="list-style-type: none"> Sampled: 15 November 2019 between 08:12 and 08:13 Relinquished at FedEx: 15 November 2019 at 12:00 Arrived at Eurofins Test America: 16 November 2019 at 11:50

Reviewed Item	Determination	Requirements/Comments
Temperature	See Qualification Summary Table	Temperature 4 ± 2 °C Temperature at arrival: 2 coolers @ 6.5, 7.8 °C
Holding Time	SATISFACTORY	Holding time for aqueous samples is 14 days. <ul style="list-style-type: none"> • Sampled: 15 November 2019 • Extracted: 18 November 2016 (3 days) • Analyzed: 20 November 2019 (2 days)
Dilution	INFORMATION ONLY	No samples were diluted.

10.2 Stage 2a Review

Reviewed Item	Determination	Requirements/Comments
Method Blank (MB)	SATISFACTORY	<ul style="list-style-type: none"> • Perform one per preparatory batch. • No analytes detected $> \frac{1}{2}$ LOQ or $> 1/10$th the amount measured in any sample or $1/10$th the regulatory limit, whichever is greater. • Common contaminants must not be detected $> \text{LOQ}$.
Laboratory Control Sample (LCS)	SATISFACTORY	<ul style="list-style-type: none"> • Perform one per preparatory batch. • Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan. • Specified: Lab in-house limits
Matrix Spike (MS), Matrix Spike Duplicate (MSD), and Relative Percent Difference (RPD)	SATISFACTORY	<ul style="list-style-type: none"> • Perform one per preparatory batch. • Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan. • Specified: Lab in-house limits • RPD of all analytes $\leq 30\%$ (between MS and MSD).
Surrogate Spike	SATISFACTORY	<ul style="list-style-type: none"> • Perform for all field and QC samples. • Recoveries must be within DoD/DOE QSM Appendix C Limits, project limits, or lab in-house limits as specified in the project plan.
Compound Identification and Quantitation	SATISFACTORY	<ul style="list-style-type: none"> • Compounds are identified and quantified automatically by the instrument. • Manual integration of one or more chromatographic peaks may be required to correct integration performed by the instrument. • All cases where manual review and integration of the chromatograms was required were initialed and dated by the reviewer in the data package. • Was manual integration performed? (Y/N): N
Field Duplicates (FD)	NA	<ul style="list-style-type: none"> • RPD of all analytes $\leq 30\%$ (between sample and FD), or as specified by project limits. • Were FDs collected? (Y/N): N

10.3 Stage 2b Review

Reviewed Item	Determination	Requirements/Comments
Initial Calibration (ICAL) for All Analytes Including Surrogates	SATISFACTORY	<ul style="list-style-type: none"> Perform at instrument set-up and after ICV or CCV failure, prior to sample analysis. Each analyte must meet one of the three options below: <ul style="list-style-type: none"> Option 1: RSD for each analyte $\leq 20\%$; Option 2: linear least squares regression for each analyte: $r^2 \geq 0.99$; Option 3: non-linear least squares regression (quadratic) for each analyte: $r^2 \geq 0.99$.
Retention Time window position establishment	SATISFACTORY	<ul style="list-style-type: none"> Perform once per ICAL and at the beginning of the analytical sequence. Position shall be set using the midpoint standard of the ICAL curve when ICAL is performed. On days when ICAL is not performed, the initial CCV is used.
Retention Time (RT) Window Width	SATISFACTORY	<ul style="list-style-type: none"> Perform at method set-up and after major maintenance (e.g., column change). RT width is ± 3 times standard deviation for each analyte RT from the 72-hour study or 0.03 minutes, whichever is greater.
Initial Calibration Verification (ICV)	SATISFACTORY	<ul style="list-style-type: none"> Perform once after each ICAL, analysis of a second source standard prior to sample analysis. All reported analytes within established RT windows. All reported analytes within $\pm 20\%$ of true value.
Continuing Calibration Verification (CCV)	SATISFACTORY	<ul style="list-style-type: none"> Perform daily before sample analysis, after every 10 field samples, and at the end of the analysis sequence with the exception of CCVs for Pesticide multi-component analytes (i.e., Toxaphene, Chlordane and Aroclors other than 1016 and 1260), which are only required before sample analysis. All reported analytes and surrogates within established RT windows. All reported analytes and surrogates within $\pm 20\%$ of true value.

10.4 Qualification Summary Table

SDG	Sample Affected	Analyte	Flag	Notes
580-90861-1	OF-1, OF-2	Diesel, Motor Oil	No flags	Cooler temperature arrived to the laboratory out of control high, but $\leq 10^\circ\text{C}$

11. Dissolved Organic Carbon, Method EPA 415.1

11.1 Stage 1 Review

Reviewed Item	Determination	Requirements/Comments
Sample Custody	SATISFACTORY	<p>All samples received under proper chain of custody.</p> <ul style="list-style-type: none"> Sampled: 15 November 2019 between 08:12 and 08:13 Relinquished at FedEx: 15 November 2019 at 12:00 Arrived at Katahdin: 16 November 2019 at 09:54
Temperature	SATISFACTORY	Temperature $4 \pm 2^\circ\text{C}$

Reviewed Item	Determination	Requirements/Comments
		Temperature at arrival: 3.7 °C
Holding Time	SATISFACTORY	Holding time for aqueous samples is 28 days. <ul style="list-style-type: none"> Sampled: 15 November 2019 Analyzed: 25-26 November 2019 (10-11 days)
Dilution	INFORMATION ONLY	No samples were diluted.

11.2 Stage 2a Review

Reviewed Item	Determination	Requirements/Comments
Method Blank (MB)	See Qualification Summary Table	<ul style="list-style-type: none"> Perform one per preparatory batch. No analytes detected > ½ LOQ or > 1/10th the amount measured in any sample or 1/10th the regulatory limit, whichever is greater.
Laboratory Control Sample (LCS)	SATISFACTORY	<ul style="list-style-type: none"> Perform one per preparatory batch. Recoveries must be within project limits, or lab in-house limits as specified in the project plan. Specified: Lab in-house limits
Field Duplicates (FD)	NA	<ul style="list-style-type: none"> RPD of all analytes ≤ 30% (between sample and FD), or as specified by project limits. Were FDs collected? (Y/N): N

11.3 Stage 2b Review

Reviewed Item	Determination	Requirements/Comments
Initial Calibration (ICAL) for All Analytes Including Surrogates	SATISFACTORY	<ul style="list-style-type: none"> Perform prior to sample analysis. Blank plus 5 points. $r^2 \geq 0.995$.
Initial Calibration Verification (ICV)	SATISFACTORY	<ul style="list-style-type: none"> Perform daily, prior to sample analysis, immediately following ICAL. Within ± 10% of expected concentration.
Carbonate-bicarbonate (CO ₃ -HCO ₃) Standard	SATISFACTORY	<ul style="list-style-type: none"> For instruments which subtract the inorganic concentration from the total to calculate the TOC, ± 10% from expected concentration. For instruments which acidify and sparge the inorganic carbon, a recovery of less than the contract-required detection limit (CRDL) is required.
Continuing Calibration Verification (CCV)	SATISFACTORY	<ul style="list-style-type: none"> Perform before sample analysis, after every 10 samples and end of run. Within ± 10% of expected concentration.
Calibration Blank Verification (ICB, CCB)	SATISFACTORY	<ul style="list-style-type: none"> Perform after ICV and CCVs < CRDL
Contract-Required Detection Limit (CRDL) Verification Standard (< 2X CRDL) or LCS	SATISFACTORY	<ul style="list-style-type: none"> After initial CCV Within ± 20% of expected concentration.

11.4 Qualification Summary Table

SDG	Sample Affected	Analyte	Flag	Notes
580-90861-1	OF-1, OF-2	Dissolved organic carbon	J+ (all detects), no flag (all non-detects)	MB result was 0.87 J mg/L, which is > ½ LOQ (1.0 mg/L), and > 1/10 of sample result (4.5 mg/L).

12. Total Suspended Solids, Method SM 2540D

12.1 Stage 1 Review

Reviewed Item	Determination	Requirements/Comments
Sample Custody	SATISFACTORY	All samples received under proper chain of custody. <ul style="list-style-type: none">• Sampled: 15 November 2019 between 08:12 and 08:13• Relinquished at FedEx: 15 November 2019 at 12:00• Arrived at Katahdin: 16 November 2019 at 09:54
Temperature	SATISFACTORY	Temperature 4 ± 2 °C Temperature at arrival: 3.7 °C
Holding Time	SATISFACTORY	Holding time for preparation is 7 days. <ul style="list-style-type: none">• Sampled: 15 November 2019• Prepared: 20 November 2019 (5 days)• Analyzed: 26 November 2019 (6 days)

12.2 Stage 2a Review

Reviewed Item	Determination	Requirements/Comments
Method Blank (MB)	SATISFACTORY	<ul style="list-style-type: none">• Perform one per preparatory batch.• No analytes detected > ½ LOQ or > 1/10th the amount measured in any sample or 1/10th the regulatory limit, whichever is greater.
Laboratory Control Sample (LCS)	SATISFACTORY	<ul style="list-style-type: none">• Perform one per preparatory batch.• Recoveries must be within project limits, or lab in-house limits as specified in the project plan.• Specified: Lab in-house limits
Field Duplicates (FD)	NA	<ul style="list-style-type: none">• RPD of all analytes $\leq 30\%$ (between sample and FD), or as specified by project limits.• Were FDs collected? (Y/N): N

12.3 Stage 2b Review

Not applicable.

12.4 Qualification Summary Table

No data was qualified based on validation.

13. Summary of Data Quality Indicators

This section provides an overall quantitative and qualitative assessment of the data and identifies potential sources of error, uncertainty, and bias that may affect the overall usability. The data quality indicators defined in the QAPP and presented in this section include precision, accuracy, representativeness, completeness, and sensitivity.

Precision

Precision is defined as the degree of agreement between or among independent, similar, or repeated measures. Duplicate pairs such as MS/MSD, LCS/LCSD, laboratory duplicate, and field duplicate samples are evaluated as RPD. The relative percent difference (RPD) for these analyses is calculated as follows:

$$RPD = \frac{|S_1 - S_2|}{S_{avg}} \times 100\%$$

Where S_1 and S_2 = the observed concentration of analyte in the sample and its duplicate, and

S_{avg} = the average of observed analyte concentration in the samples and its duplicate.

Data for which RPD was out of control limits is discussed in section 4.4, 5.4, and 8.4. The precision of the data set is considered acceptable after qualification (flagging) of estimated results.

Accuracy

Accuracy is the amount of agreement between a measured value and the true value. Accuracy, expressed as %Recovery (%R), was assessed for each method, analyte, and matrix, by comparing MS/MSD, LCS/LCSD, and surrogate recoveries to the method limits. Measurements for which accuracy is out of control limits are discussed in section 2.4, 4.4, and 6.4. The accuracy of the data set is considered acceptable after qualification (flagging) of estimated results.

Representativeness

Representativeness is a qualitative parameter that expresses the degree to which the sample data are characteristic of a population and is evaluated by reviewing the QC results of blank samples and holding times. Positive detects of compounds in the method blank samples identify compounds that may have been introduced into the samples during preparation, or analysis.

All samples for each method and matrix were evaluated for holding time compliance. All holding times and temperature requirements were met

Method blanks were performed at the required frequency and contaminants were not detected in analyses, with the following two exceptions. The first is discussed in Section 7.4, for PCB congeners. Various analytes are detected in the method blank at low concentrations, with some being $> 1/10$ the concentration detected in the parent sample. These results that were detected in the method blank were flagged as UJ in the parent sample. The second was for dissolved organic carbon, discussed in Section 11.4. The method blank result was 0.87 J mg/L, which is $> 1/2$ LOQ (1.0 mg/L), and $> 1/10$ of sample result (4.5 mg/L). All detects were flagged J+ and non-detects were not flagged.

Two of three coolers that were shipped to Eurofins Test America had temperatures that were outside of acceptable limits – these coolers arrived with temperatures greater than 6 °C, but less than 10 °C. The sample results were not flagged.

For silver (section 2.4) the LDR %R was out of control low (87% R, low limit is 89.5%). There were no detections greater than the LDR, and so no data was flagged.

The representativeness of the project data is considered acceptable after qualification (flagging) of estimated results.

Completeness

Analytical completeness was calculated as defined in the QAPP and expressed as the percentage of measurements that were judged to be valid, i.e., not rejected, and acceptable for all intended data use. No data was rejected; analytical completeness for this sampling event was 100%.

Sensitivity

Sensitivity is the ability of an analytical method or instrument to discriminate between measurement responses representing different concentrations. The sensitivity of the analytical methods (i.e., method reporting limits) identified for this project comply with the QAPP (USACE 2019a).

14. Conclusions

The overall assessment of data indicates that the data set met project requirements. Sample results that were found to be estimated (J) should be used with caution if results are close to project decision limits or regulatory benchmarks. Based upon the data review performed, all results are considered valid and usable for all purposes.

15. References

- Department of Defense (DoD), 2018a. *General Data Validation Guidelines*, Version 5.1, February 9.
- DoD, 2018b. *Data Validation Guidelines Module 1: Data Validation Procedure for Organic Analysis by GC/MS* (SW-846 8260, 8270). August 3.
- DoD, 2019. *DoD Quality Systems Manual for Environmental Laboratories*, Version 5.3, May 8.
- United States Army Corps of Engineers (USACE), 2019a. *Work Plan with Quality Assurance Project Plan (WP-QAPP) Amendment 1 for Catch Basin Solids and Stormwater Sampling at Sandblast AOPC, Bradford Island, Cascade Locks, Oregon*, March 4.
- USACE, 2019b. *Stormwater Sampling Field Report, Sandblast AOPC, Bradford Island, Cascade Locks, Oregon*. July 11.
- United States Environmental Protection Agency (USEPA), 2009. *Guidance for Labeling Externally Validated Data for Superfund Use*, EPA 540-R-08-00. January 13.
- USEPA, 2016. *National Functional Guidelines for High Resolution Superfund Methods Data Review*, EPA 542-B-16-001. April.
- USEPA, 2017a. *National Functional Guidelines for Inorganic Superfund Methods Data Review*, EPA 540-R-2017-001. January.
- USEPA, 2017b. *National Functional Guidelines for Organic Superfund Methods Data Review*, EPA 540-R-2017-002. January.
- USEPA, 2016. *Quick Guide To Drinking Water Sample Collection*. September.

Table 1. Sample Locations, Sample ID Numbers, and Sample Dates.

Analyses	OF-1	OF-2	Sample Date
Total and Dissolved Metals, EPA 200.8	N	N; MS/MSD	15 November 2019
Total and Dissolved Mercury, EPA 7470A	N	N; MS/MSD	15 November 2019
PAHs, EPA 8270D SIM	N	N; MS/MSD	15 November 2019
PCB Congeners, EPA 1668C	N	N; MS/MSD	15 November 2019
Organochlorine Pesticides, EPA 8081B	N	N; MS/MSD	15 November 2019
Total Organotins, PSEP	N	N; MS/MSD	15 November 2019
Gasoline-Range Petroleum Products, NWTPH-Gx	N	N; MS/MSD	15 November 2019
Diesel-Range Petroleum Products, NWTPH-Dx	N	N; MS/MSD	15 November 2019
SVOCs, EPA 8270D	N	N; MS/MSD	15 November 2019
Hardness as CaCO ₃ , EPA 200.8	N	N	15 November 2019
Dissolved Organic Carbon, EPA 415.1	N	N	15 November 2019
Total Suspended Solids, SM 2540D	N	N	15 November 2019
Temperature, Field Measurement	F	F	15 November 2019
pH, Field Measurement	F	F	15 November 2019

N = normal sample; MS/MSD = extra sample volume sufficient for MS/MSD was obtained; F = field measurement.

Table 2. Limit and Data Qualifier Flag Definitions.

Limit	Definition
LOQ	Limit of Quantitation: The smallest concentration that produces a quantitative result with known and recorded precision and bias. For DoD/DOE projects, the LOQ shall be set at or above the concentration of the lowest initial calibration standard and within the calibration range.
LOD	Limit of Detection: The smallest concentration of a substance that must be present in a sample in order to be detected at the DL with 99% confidence. At the LOD, the false negative rate (Type II error) is 1%. A LOD may be used as the lowest concentration for reliably reporting a non-detect of a specific analyte in a specific matrix with a specific method at 99% confidence. A LOD is typically 2x to 4x the DL.
DL	Detection Limit: The smallest analyte concentration that can be demonstrated to be different from zero or a blank concentration with 99% confidence. At the DL, the false positive rate (Type I error) is 1%. A DL may be used as the lowest concentration for reliably reporting a detection of a specific analyte in a specific matrix with a specific method with 99% confidence.
Flag	Definition
J	The analyte was detected above the DL. The reported result is an estimated value with an unknown bias. The result receives a J-flag if it is below the LOQ, or due to other quality reasons.
J+	The analyte was detected above the DL. The result is an estimated quantity, but the result may be biased high. The result receives a J-flag if it is below the LOQ, or due to other quality reasons.
J-	The analyte was detected above the DL. The result is an estimated quantity, but the result may be biased low. The result receives a J-flag if it is below the LOQ, or due to other quality reasons.
U	The analyte was not detected and was reported as less than the LOD or as defined by the customer. The LOD has been adjusted for any dilution or concentration of the sample.
UJ	The analyte was not detected and was reported as less than the LOD or as defined by the customer. However, the associated numerical value is approximate.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

Attachment 1:

Table 3. Validated Data (Detects are Bold).

										OF-1 (CB-1)																	OF-2																
Bold Number = Detected (Not bold = non-detect)																																											
Method: 200.8 - Total Metals (ICP/MS)																																											
Analyte		Result	Qualifier	LOQ	LOD	MDL	Unit	Dil Fac		Result	Qualifier	LOQ	LOD	MDL	Unit	Dil Fac																											
Antimony		0.187	J		0.20	0.10	0.011	µg/L	1	0.050	J A		0.20	0.10	0.011	µg/L	1																										
Arsenic		0.60	J		1.0	0.80	0.45	µg/L	1	0.80	U		1.0	0.80	0.45	µg/L	1																										
Cadmium		0.226	J		0.20	0.040	0.0059	µg/L	1	0.020	J N		0.20	0.040	0.0059	µg/L	1																										
Chromium		11.0			1.0	0.80	0.045	µg/L	1	0.462	J		1.0	0.80	0.045	µg/L	1																										
Copper		13.3			0.60	0.40	0.037	µg/L	1	38.4			0.60	0.40	0.037	µg/L	1																										
Lead		48.4			0.20	0.10	0.015	µg/L	1	0.772			0.20	0.10	0.015	µg/L	1																										
Nickel		5.54			0.40	0.24	0.030	µg/L	1	0.462			0.40	0.24	0.030	µg/L	1																										
Selenium		0.087	J		1.0	0.60	0.037	µg/L	1	0.067	J		1.0	0.60	0.037	µg/L	1																										
Silver		0.018	J		0.20	0.080	0.010	µg/L	1	0.080	U		0.20	0.080	0.010	µg/L	1																										
Zinc		55.3			2.0	1.6	0.78	µg/L	1	51.9			2.0	1.6	0.78	µg/L	1																										
Method: 200.8 - Dissolved Metals (ICP/MS)																																											
Analyte		Result	Qualifier	LOQ	LOD	MDL	Unit	Dil Fac		Result	Qualifier	LOQ	LOD	MDL	Unit	Dil Fac																											
Antimony		0.078	J		0.20	0.10	0.011	µg/L	1	0.082	J		0.20	0.10	0.011	µg/L	1																										
Arsenic		0.80	U		1.0	0.80	0.45	µg/L	1	0.80	U		1.0	0.80	0.45	µg/L	1																										
Cadmium		0.046	J		0.20	0.040	0.0059	µg/L	1	0.026	J+		0.20	0.040	0.0059	µg/L	1																										
Chromium		0.718	J		1.0	0.80	0.045	µg/L	1	0.34	J		1.0	0.80	0.045	µg/L	1																										
Copper		4.55			0.60	0.40	0.037	µg/L	1	25.8			0.60	0.40	0.037	µg/L	1																										
Lead		0.804			0.20	0.10	0.015	µg/L	1	0.166	J		0.20	0.10	0.015	µg/L	1																										
Nickel		1.61			0.40	0.24	0.030	µg/L	1	0.424			0.40	0.24	0.030	µg/L	1																										
Selenium		0.60	U		1.0	0.60	0.037	µg/L	1	0.067	J		1.0	0.60	0.037	µg/L	1																										
Silver		0.080	U		0.20	0.080	0.010	µg/L	1	0.080	U		0.20	0.080	0.010	µg/L	1																										
Zinc		10.9			2.0	1.6	0.78	µg/L	1	47.2			2.0	1.6	0.78	µg/L	1																										
Method: 7470 - Total Mercury (CVAA)																																											
Analyte		Result	Qualifier	LOQ	LOD	MDL	Unit	Dil Fac		Result	Qualifier	LOQ	LOD	MDL	Unit	Dil Fac																											
Mercury		0.10	U		0.20	0.10	0.013	µg/L	1	0.10	U		0.20	0.10	0.013	µg/L	1																										
Method: 7470 - Dissolved Mercury (CVAA)																																											
Analyte		Result	Qualifier	LOQ	LOD	MDL	Unit	Dil Fac		Result	Qualifier	LOQ	LOD	MDL	Unit	Dil Fac																											
Mercury		0.10	U		0.20	0.10	0.013	µg/L	1	0.10	U		0.20	0.10	0.013	µg/L	1																										
Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)																																											
Analyte		Result	Qualifier	LOQ	LOD	MDL	Unit	Dil Fac		Result	Qualifier	LOQ	LOD	MDL	Unit	Dil Fac																											
Di-n-butylbenzylphthalate		1.2	U		2.3	1.2	0.96	µg/L	1	1.0	U		2.1	1.0	0.86	µg/L	1																										
Bis(2-ethylhexyl)phthalate		0.82	J		1.2	0.58	0.58	µg/L	1	0.52	UJ		1.0	0.52	0.52	µg/L	1																										
Carbazole		0.58	UJ		1.2	0.58	0.22	µg/L	1	0.52	UJ		1.0	0.52	0.20	µg/L	1																										
Phenol		0.58	U		1.2	0.58	0.14	µg/L	1	0.52	UJ		1.0	0.52	0.12	µg/L	1																										
Butylbenzylphthalate		0.58	U		1.2	0.58	0.15	µg/L	1	0.52	U		1.0	0.52	0.14	µg/L	1																										
Method: 8270D SIM - Polycyclic Aromatic Hydrocarbons (PAHs) by GC/MS SIM																																											
Analyte		Result	Qualifier	LOQ	LOD	MDL	Unit	Dil Fac		Result	Qualifier	LOQ	LOD	MDL	Unit	Dil Fac																											
Naphthalene		0.091	UJ		0.11		0.035	ug/L	1	0.099	UJ		0.12		0.038	ug/L	1																										
2-Methylnaphthalene		0.091	UJ		0.23		0.045	ug/L	1	0.099	UJ		0.25		0.048	ug/L	1																										
Acenaphthylene		0.037	U		0.057		0.010	ug/L	1	0.039	U		0.062		0.011	ug/L	1																										
Acenaphthene		0.037	U		0.11		0.016	ug/L	1	0.039	U		0.12		0.017	ug/L	1																										
Fluorene		0.037	U		0.11		0.019	ug/L	1	0.039	U		0.12		0.021	ug/L	1																										
Phenanthrene		0.041	J		0.11		0.035	ug/L	1	0.099	U		0.12		0.038	ug/L	1																										
Anthracene		0.091	U		0.11		0.025	ug/L	1	0.099	U		0.12		0.027	ug/L	1																										
Fluoranthene		0.14	J		0.23		0.057	ug/L	1	0.22	U		0.25		0.062	ug/L	1																										
Pyrene		0.13			0.11		0.038	ug/L	1	0.099	U		0.12		0.041	ug/L	1																										
Benzo[a]anthracene		0.081			0.057		0.016	ug/L	1	0.039	U		0.062		0.017	ug/L	1																										
Chrysene		0.093	J		0.11		0.018	ug/L	1	0.039	U		0.12		0.02	ug/L	1																										
Benzo[b]fluoranthene		0.13			0.057		0.013	ug/L	1	0.039	U		0.062		0.014	ug/L	1																										
Benzo[k]fluoranthene		0.045	J		0.057		0.014	ug/L	1	0.039	U		0.062		0.015	ug/L	1																										
Benzo[a]pyrene		0.072	J		0.11		0.013	ug/L	1	0.039	U		0.12		0.014	ug/L	1																										
Indeno[1,2,3-cd]pyrene		0.060			0.057		0.016	ug/L	1	0.039	U		0.062		0.017	ug/L	1																										
Dibenzo[a,h]anthracene		0.037	U		0.11		0.030	ug/L	1	0.039	U		0.12		0.032	ug/L	1																										
Benzo[g,h,i]perylene		0.062			0.057		0.014	ug/L	1	0.039	U		0.062		0.015	ug/L	1																										
Method: 8081B - Organochlorine Pesticides (GC)																																											
Analyte		Result	Qualifier	LOQ	LOD	MDL	Unit	Dil Fac		Result	Qualifier	LOQ	LOD	MDL	Unit	Dil Fac																											
Gamma-BHC		0.0053	UJ		0.010	0.0053	0.0015	ug/L	1	0.0057	U		0.011	0.0057	0.0016	ug/L	1																										
Heptachlor		0.0053	UJ		0.010	0.0053	0.0017	ug/L	1	0.0057	U		0.011	0.0057	0.0018	ug/L	1																										
Aldrin		0.0053	UJ		0.010	0.0053	0.0016	ug/L	1	0.0057	U		0.011	0.0057	0.0017	ug/L	1																										
Heptachlor Epoxide		0.0053	UJ		0.010	0.0053	0.0016	ug/L	1	0.0057	U		0.011	0.0057	0.0017	ug/L	1																										
Endosulfan I		0.0053	UJ		0.010	0.0053	0.0013	ug/L	1	0.0057	U		0.011	0.0057	0.0014	ug/L	1																										
Gamma-Chlordane		0.0053	UJ		0.010	0.0053	0.0013	ug/L	1	0.0057	U		0.011	0.0057	0.0014	ug/L	1																										
Alpha-Chlordane		0.0053	UJ		0.010	0.0053	0.0016	ug/L	1	0.0057	U		0.011	0.0057	0.0017	ug/L	1																										
4,4'-DDE		0.010	UJ		0.021	0.010	0.0010	ug/L	1	0.011	U		0.023	0.011	0.0011	ug/L	1																										
Dieldrin		0.0036	J-		0.021	0.010	0.0014	ug/L	1	0.011	U		0.023	0.011	0.0015	ug/L	1																										
Endrin		0.010	UJ		0.021	0.010	0.0018	ug/L	1	0.011	U		0.023	0.011	0.0019	ug/L	1																										
4,4'-DDD		0.010	UJ		0.021	0.010	0.0019	ug/L	1	0.011	U		0.023	0.011	0.0020	ug/L	1																										
Endosulfan II		0.010	UJ		0.021	0.010	0.0012	ug/L	1	0.011	U		0.023	0.011	0.0013	ug/L	1																										
4,4'-DDT		0.010	UJ		0.021	0.010	0.0019	ug/L	1	0.011	U		0.023	0.011	0.0020	ug/L	1																										
Endrin Aldehyde		0.010	UJ		0.021	0.010	0.0013	ug/L	1	0.011	U		0.023	0.011	0.0014	ug/L	1																										
Endosulfan Sulfate		0.015	J-		0.021	0.010	0.0014	ug/L	1	0.011	U		0.023	0.011	0.0015	ug/L	1																										
Methoxychlor		0.053	UJ		0.10	0.053	0.0018	ug/L	1	0.057	U		0.11	0.057	0.0019	ug/L	1																										
Endrin Ketone	</																																										

PCB-7		28 U	220		8.0 pg/L	1		28 U	230		5.1 pg/L	1
PCB-8		28 U	220		6.5 pg/L	1		28 U	230		4.2 pg/L	1
PCB-9		55 U	220		7.5 pg/L	1		56 U	230		4.8 pg/L	1
PCB-10		55 U	220		9.8 pg/L	1		56 U	230		18 pg/L	1
PCB-11		41 J	220		7.6 pg/L	1		23 J	230		4.9 pg/L	1
PCB-12		44 U	440		8.5 pg/L	1		45 U	450		5.5 pg/L	1
PCB-13		44 U	440		8.5 pg/L	1		45 U	450		5.5 pg/L	1
PCB-14		28 U	220		8.3 pg/L	1		28 U	230		5.3 pg/L	1
PCB-15		22 U	220		8.2 pg/L	1		23 U	230		6.4 pg/L	1
PCB-16		5.8 J	220		2.3 pg/L	1		3.8 J	230		2.2 pg/L	1
PCB-17		5.3 J	220		2.3 pg/L	1		11 U	230		2.2 pg/L	1
PCB-18		6.5 UJ	440		1.6 pg/L	1		6.5 UJ	450		1.5 pg/L	1
PCB-19		11 U	220		2.9 pg/L	1		11 U	230		1.8 pg/L	1
PCB-20		15 UJ	440		1.9 pg/L	1		8.5 UJ	450		1.6 pg/L	1
PCB-21		7.0 J	440		1.8 pg/L	1		5.3 J	450		1.6 pg/L	1
PCB-22		5.3 J	220		1.7 pg/L	1		3.1 J	230		1.5 pg/L	1
PCB-23		22 U	220		1.9 pg/L	1		23 U	230		1.6 pg/L	1
PCB-24		22 U	220		1.6 pg/L	1		23 U	230		1.5 pg/L	1
PCB-25		22 U	220		1.6 pg/L	1		23 U	230		1.4 pg/L	1
PCB-26		44 U	440		2.0 pg/L	1		45 U	450		1.7 pg/L	1
PCB-27		22 U	220		1.7 pg/L	1		23 U	230		1.7 pg/L	1
PCB-28		15 UJ	440		1.9 pg/L	1		8.5 UJ	450		1.6 pg/L	1
PCB-29		44 U	440		2.0 pg/L	1		45 U	450		1.7 pg/L	1
PCB-30		6.5 UJ	440		1.6 pg/L	1		6.5 UJ	450		1.5 pg/L	1
PCB-31		16 UJ	220		2.1 pg/L	1		8.8 UJ	230		1.8 pg/L	1
PCB-32		3.4 J	220		1.5 pg/L	1		3.4 J	230		1.5 pg/L	1
PCB-33		7 J	440		1.8 pg/L	1		5.3 J	450		1.6 pg/L	1
PCB-34		22 U	220		2.1 pg/L	1		23 U	230		1.8 pg/L	1
PCB-35		11 U	220		2.0 pg/L	1		11 U	230		1.8 pg/L	1
PCB-36		11 U	220		1.8 pg/L	1		11 U	230		1.5 pg/L	1
PCB-37		8.5 J	220		2.1 pg/L	1		11 U	230		2.5 pg/L	1
PCB-38		22 U	220		1.9 pg/L	1		23 U	230		1.6 pg/L	1
PCB-39		11 U	220		2.0 pg/L	1		11 U	230		1.7 pg/L	1
PCB-40		15 J	440		1.9 pg/L	1		23 UJ	450		1.1 pg/L	1
PCB-41		11 U	220		2.7 pg/L	1		11 U	230		1.6 pg/L	1
PCB-42		8.3 J	220		2.2 pg/L	1		23 U	230		1.3 pg/L	1
PCB-43		11 U	220		2.1 pg/L	1		11 U	230		1.3 pg/L	1
PCB-44		74 J	670		1.9 pg/L	1		9.0 UJ	680		1.1 pg/L	1
PCB-45		22 U	220		3.0 pg/L	1		23 U	230		1.8 pg/L	1
PCB-46		22 U	220		2.6 pg/L	1		23 U	230		1.5 pg/L	1
PCB-47		74 J	670		1.9 pg/L	1		9.0 UJ	680		1.1 pg/L	1
PCB-48		4.5 J	220		2.1 pg/L	1		1.5 J	230		1.2 pg/L	1
PCB-49		36 J	440		1.8 pg/L	1		4.1 UJ	450		1.1 pg/L	1
PCB-50		5.0 J	440		2.1 pg/L	1		45 U	450		1.2 pg/L	1
PCB-51		22 U	220		1.9 pg/L	1		23 U	230		1.2 pg/L	1
PCB-52		160 J	220		2.0 pg/L	1		12 UJ	230		1.2 pg/L	1
PCB-53		5.0 J	440		2.1 pg/L	1		45 U	450		1.2 pg/L	1
PCB-54		11 U	220		2.8 pg/L	1		11 U	230		0.79 pg/L	1
PCB-55		11 U	220		2.1 pg/L	1		11 U	230		0.68 pg/L	1
PCB-56		23 J	220		2.4 pg/L	1		2.4 J	230		0.79 pg/L	1
PCB-57		11 U	220		2.4 pg/L	1		11 U	230		0.79 pg/L	1
PCB-58		22 U	220		2.2 pg/L	1		23 U	230		0.73 pg/L	1
PCB-59		2.4 J	670		1.7 pg/L	1		68 U	680		0.98 pg/L	1
PCB-60		12 J	220		2.7 pg/L	1		23 U	230		0.88 pg/L	1
PCB-61		150 J	890		2.3 pg/L	1		9.4 UJ	900		0.75 pg/L	1
PCB-62		2.4 J	670		1.7 pg/L	1		68 U	680		0.98 pg/L	1
PCB-63		22 U	220		2.7 pg/L	1		23 U	230		0.88 pg/L	1
PCB-64		26 J	220		1.5 pg/L	1		3.1 J	230		0.90 pg/L	1
PCB-65		74 J	670		1.9 pg/L	1		9.0 UJ	680		1.1 pg/L	1
PCB-66		54 J	220		2.5 pg/L	1		3.1 J	230		0.82 pg/L	1
PCB-67		22 U	220		2.0 pg/L	1		23 U	230		0.66 pg/L	1
PCB-68		22 U	220		2.4 pg/L	1		23 U	230		0.78 pg/L	1
PCB-69		36 J	440		1.8 pg/L	1		4.1 UJ	450		1.1 pg/L	1
PCB-70		150 J	890		2.3 pg/L	1		9.4 UJ	900		0.75 pg/L	1
PCB-71		15 J	440		1.9 pg/L	1		23 U	450		1.1 pg/L	1
PCB-72		22 U	220		2.3 pg/L	1		23 U	230		0.74 pg/L	1
PCB-73		1.7 J	220		1.5 pg/L	1		23 U	230		0.90 pg/L	1
PCB-74		150 J	890		2.3 pg/L	1		9.4 UJ	900		0.75 pg/L	1
PCB-75		2.4 J	670		1.7 pg/L	1		68 U	680		0.98 pg/L	1
PCB-76		150 J	890		2.3 pg/L	1		9.4 UJ	900		0.75 pg/L	1
PCB-77		29	22		2.9 pg/L	1		11 U	23		1.4 pg/L	1
PCB-78		11 U	220		2.6 pg/L	1		11 U	230		0.86 pg/L	1
PCB-79		7.7 J	220		2.3 pg/L	1		11 U	230		0.76 pg/L	1
PCB-80		11 U	220		2.4 pg/L	1		11 U	230		0.79 pg/L	1
PCB-81		11 U	22		3.0 pg/L	1		11 U	23		1.4 pg/L	1
PCB-82		51 J	220		27 pg/L	1		11 U	230		1.3 pg/L	1
PCB-83		44 J	220		38 pg/L	1		23 U M	230		1.8 pg/L	1
PCB-84		140 J	220		31 pg/L	1		5.5 J	230		1.5 pg/L	1
PCB-85		58 J	670		22 pg/L	1		68 U	680		1.0 pg/L	1
PCB-86		440 J	1300		20 pg/L	1		12 J	1400		0.96 pg/L	1
PCB-87		440 J	1300		20 pg/L	1		12 J	1400		0.96 pg/L	1
PCB-88		64 J	440		27 pg/L	1		23 U	450		1.3 pg/L	1
PCB-89		11 U	220		25 pg/L	1		11 U	230		1.2 pg/L	1
PCB-90		1100	670		22 pg/L	1		21 UJ	680		1.0 pg/L	1
PCB-91		64 J	440		27 pg/L	1		23 U	450		1.3 pg/L	1
PCB-92		150 J	220		27 pg/L	1		11 U	230		1.3 pg/L	1
PCB-93		22 U	440		26 pg/L	1		23 U	450		1.2 pg/L	1
PCB-94		22 U	220		29 pg/L	1		23 U	230		1.4 pg/L	1
PCB-95		610	220		27 pg/L	1		17 UJ	230		1.3 pg/L	1
PCB-96		2.6 J	220		0.41 pg/L	1		23 U	230		0.62 pg/L	1
PCB-97		440 J	1300		20 pg/L	1		12 J	1400		0.96 pg/L	1
PCB-98		22 U	440		22 pg/L	1		23 U	450		1.0 pg/L	1
PCB-99		180 J	220		19 pg/L	1		6.0 J	230		0.9 pg/L	1
PCB-100		22 U	440		26 pg/L	1		23 U	450		1.2 pg/L	1
PCB-101		1100	670		22 pg/L	1		21 UJ	680		1.0 pg/L	1
PCB-102		22 U	440		22 pg/L	1		23 U	450		1.0 pg/L	1
PCB-103		11 U	220		25 pg/L	1		11 U	230		1.2 pg/L	1
PCB-104		1.4 J	220		0.71 pg/L	1		11 U	230		0.43 pg/L	1
PCB-105		310	22		21 pg/L	1		9.9 UJ	23		1.1 pg/L	1
PCB-106		22 U	220		16 pg/L	1		23 U	230		0.77 pg/L	1
PCB-107		38 J	440		19 pg/L	1		23 U	450		0.89 pg/L	1
PCB-108		440 J	1300		20 pg/L	1		12 J	1400		0.96 pg/L	1
PCB-109		80 J	220		20 pg/L	1		11 U	230		0.95 pg/L	1
PCB-110		980	440		16 pg/L	1		19 UJ	450		0.74 pg/L	1
PCB-111		22 U	220		18 pg/L	1		23 U	230		0.86 pg/L	1
PCB-112		11 U	220		15 pg/L	1		11 U	230		0.69 pg/L	1
PCB-113		1100	670		22 pg/L	1		21 UJ	680		1.0 pg/L	1
PCB-114		11 U	22		21 pg/L	1		11 U	23		1.1 pg/L	1
PCB-115		980	440		16 pg/L	1		19 UJ	450		0.74 pg/L	1
PCB-116		58 J	670		22 pg/L	1		68 U	680		1.0 pg/L	1
PCB-117		58 J	670		22 pg/L	1		68 U	680		1.0 pg/L	1
PCB-118		980	22		20 pg/L	1		21 UJ	23		1.1 pg/L	1
PCB-119		440 J	1300		20 pg/L	1		12 J	1400		0.96 pg/L	1
PCB-120		11 U	220		16 pg/L	1		11 U	230		0.74 pg/L	1
PCB-121		11 U	220		16 pg/L	1		11 U	230		0.77 pg/L	1
PCB-122		11 U	220		24 pg/L	1		11 U	230		1.1 pg/L	1
PCB-123		11 U	22		21 pg/L	1		11 U	23		1.2 pg/L	1
PCB-124		38 J	440		19 pg/L	1		23 U	450		0.89 pg/L	1
PCB-125		440 J	1300		20 pg/L	1		12 J	1400		0.96 pg/L	1
PCB-126		75	22		21 pg/L	1		2.0 J	23		1.2 pg/L	1
PCB-127		22 U	220		21 pg/L	1		23 U	230		0.96 pg/L	1
PCB-128		780	440		26 pg/L	1		9.1 UJ	450		0.84 pg/L	1
PCB-129		11000	670		28 pg/L	1		85 J	680		0.91 pg/L	1
PCB-130		330	220		36 pg/L	1		4.1 J	230		1.2 pg/L	1
PCB-131		35 J	220		34 pg/L	1		23 U	230		1.1 pg/L	1
PCB-132		1800	220		30 pg/L	1		17 J	230		1.0 pg/L	1
PCB-133		63 J	220		29 pg/L	1		11 U	230		0.95 pg/L	1
PCB-134		160 J	440		32 pg/L	1		45 U	450		1.1 pg/L	1
PCB-135		1800	440		29 pg/L	1		20 J	450		0.95 pg/L	1

PCB-136		340	220	23	pg/L	1	4.4 J	230	0.77	pg/L	1
PCB-137		81 J	220	32	pg/L	1	1.8 J	230	1.1	pg/L	1
PCB-138		11000	670	28	pg/L	1	85 J	680	0.91	pg/L	1
PCB-139		22 U	440	27	pg/L	1	23 U	450	0.88	pg/L	1
PCB-140		22 U	440	27	pg/L	1	23 U	450	0.88	pg/L	1
PCB-141		2500	220	29	pg/L	1	18 J	230	0.95	pg/L	1
PCB-142		11 U	220	30	pg/L	1	11 U	230	1.0	pg/L	1
PCB-143		160 J	440	32	pg/L	1	45 U	450	1.1	pg/L	1
PCB-144		250	220	28	pg/L	1	2.7 J	230	0.93	pg/L	1
PCB-145		11 U	220	20	pg/L	1	11 U	230	0.66	pg/L	1
PCB-146		1100	220	26	pg/L	1	11 J	230	0.87	pg/L	1
PCB-147		4400	440	26	pg/L	1	41 J	450	0.85	pg/L	1
PCB-148		11 U	220	29	pg/L	1	11 U	230	0.96	pg/L	1
PCB-149		4400	440	26	pg/L	1	41 J	450	0.85	pg/L	1
PCB-150		22 U	220	20	pg/L	1	23 U	230	0.67	pg/L	1
PCB-151		1800	440	29	pg/L	1	20 J	450	0.95	pg/L	1
PCB-152		11 U	220	19	pg/L	1	11 U	230	0.64	pg/L	1
PCB-153		8800	440	23	pg/L	1	66 J	450	0.76	pg/L	1
PCB-154		11 U	220	26	pg/L	1	11 U	230	0.85	pg/L	1
PCB-155		11 U	220	32	pg/L	1	11 U	230	0.62	pg/L	1
PCB-156		1200	44	25	pg/L	1	11 UJ	45	0.88	pg/L	1
PCB-157		1200	44	25	pg/L	1	11 UJ	45	0.88	pg/L	1
PCB-158		960	220	22	pg/L	1	7.8 J	230	0.73	pg/L	1
PCB-159		350	220	17	pg/L	1	1.4 UJ	230	0.54	pg/L	1
PCB-160		22 U	220	27	pg/L	1	23 U	230	0.90	pg/L	1
PCB-161		11 U	220	20	pg/L	1	11 U	230	0.66	pg/L	1
PCB-162		40 J	220	19	pg/L	1	23 U	230	0.60	pg/L	1
PCB-163		11000	670	28	pg/L	1	85 J	680	0.91	pg/L	1
PCB-164		690	220	20	pg/L	1	6.2 J	230	0.68	pg/L	1
PCB-165		11 U	220	25	pg/L	1	11 U	230	0.82	pg/L	1
PCB-166		780	440	26	pg/L	1	9.1 UJ	450	0.84	pg/L	1
PCB-167		580	22	18	pg/L	1	5.3 UJ	23	0.67	pg/L	1
PCB-168		8800	440	23	pg/L	1	66 J	450	0.76	pg/L	1
PCB-169		93	22	20	pg/L	1	2.5 UJ	23	0.71	pg/L	1
PCB-170		12000	220	100	pg/L	1	70 J	230	1.6	pg/L	1
PCB-171		2300	440	84	pg/L	1	13 J	450	1.3		1
PCB-172		1700	220	88	pg/L	1	11 J	230	1.4	pg/L	1
PCB-173		2300	440	84	pg/L	1	13 J	450	1.3	pg/L	1
PCB-174		8500	220	78	pg/L	1	49 J	230	1.2	pg/L	1
PCB-175		190 J	220	1.3	pg/L	1	2.0 J	230	0.87	pg/L	1
PCB-176		380	220	0.96	pg/L	1	4.6 J	230	0.66	pg/L	1
PCB-177		4300	220	77	pg/L	1	25 J	230	1.2	pg/L	1
PCB-178		810	220	1.3	pg/L	1	9.7 J	230	0.89	pg/L	1
PCB-179		940	220	0.78	pg/L	1	9.9 J	230	0.53	pg/L	1
PCB-180		25000	440	72	pg/L	1	140 J	450	1.1	pg/L	1
PCB-181		11 U	220	74	pg/L	1	11 U	230	1.1	pg/L	1
PCB-182		16 J	220	1.0	pg/L	1	11 U	230	0.71		1
PCB-183		4700	220	77	pg/L	1	27 J	230	1.2	pg/L	1
PCB-184		22 U	220	0.88	pg/L	1	23 U	230	0.61	pg/L	1
PCB-185		840	220	76	pg/L	1	3.7 J	230	1.2	pg/L	1
PCB-186		11 U	220	0.78	pg/L	1	11 U	230	0.53	pg/L	1
PCB-187		5400	220	1.0	pg/L	1	53 J	230	0.72	pg/L	1
PCB-188		11 U	220	2.3	pg/L	1	11 U	230	0.67	pg/L	1
PCB-189		430	22	1.7	pg/L	1	3.9 UJ	23	0.53	pg/L	1
PCB-190		2600	220	70	pg/L	1	15 J	230	1.1	pg/L	1
PCB-191		490	220	69	pg/L	1	2.9 J	230	1.1	pg/L	1
PCB-192		22 U	220	60	pg/L	1	23 U	230	0.93	pg/L	1
PCB-193		25000	440	72	pg/L	1	140 J	450	1.1	pg/L	1
PCB-194		8700	220	5.1	pg/L	1	38 J	230	0.56	pg/L	1
PCB-195		3200	220	5.2	pg/L	1	13 J	230	0.57	pg/L	1
PCB-196		2600	220	11	pg/L	1	25 J	230	0.77		1
PCB-197		120 J	220	7.0	pg/L	1	1.2 J	230	0.50	pg/L	1
PCB-198		4500	440	9.6	pg/L	1	41 J	450	0.69	pg/L	1
PCB-199		4500	440	9.6	pg/L	1	41 J	450	0.69	pg/L	1
PCB-200		470	220	7.6	pg/L	1	3.6 J	230	0.55	pg/L	1
PCB-201		420	220	8.2	pg/L	1	3.7 J	230	0.59	pg/L	1
PCB-202		760	220	14	pg/L	1	4.9 J	230	0.58	pg/L	1
PCB-203		2700	220	8.7	pg/L	1	23 J	230	0.62	pg/L	1
PCB-204		22 U	220	7.1	pg/L	1	23 U	230	0.51	pg/L	1
PCB-205		420	220	3.3	pg/L	1	3.8 J	230	0.51	pg/L	1
PCB-206		1500	220	2.2	pg/L	1	14 J	230	1.8	pg/L	1
PCB-207		170 J	220	1.4	pg/L	1	11 U	230	1.1	pg/L	1
PCB-208		220	220	1.5	pg/L	1	11 U	230	1.2	pg/L	1
PCB-209		40 UJ	220	0.42	pg/L	1	3.7 J	230	0.32	pg/L	1